MICROCOPY RESOLUTION TEST CHART

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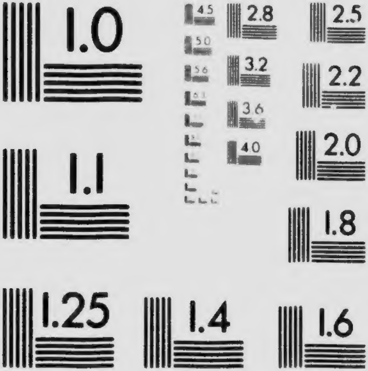

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NATURE STUDY AND AGRICULTURE COURSE

For Country Schools.

PREPARED BY

R. P. STEEVES, M. A.,

INSPECTOR OF SCHOOLS.

AUTHORIZED BY THE BOARD OF EDUCATION, SEPTEMBER 1908.

REVISED AND ENLARGED.

1911.

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INTRODUCTION.

The following Nature Study Course is intended for use in our rural common schools. The purpose has been to provide teachers with a definite graded plan for regular, continuous work.

The value of Nature Study is now generally conceded. No apology, therefore, is needed for it as a unit in a curriculum. As a basis for science teaching in secondary grades, it is indispensable. As an element of common school education it has peculiar worth. By such study children are led to form habits of intelligent observation and thought, home and school interests are intimately connected, a close knowledge of environment is acquired, and the flora and fauna of the country become better known.

In the Course now submitted Nature Study is correlated with other subjects of instruction, such as arithmetic, spelling, composition, drawing, history and geography. Each helps the other. Thus the greatest value is secured for the time spent. To carry out this Course successfully teachers will find it necessary to devote a little time daily to systematic schoolroom work, for which careful preparation has been made. Frequent short excursions to neighboring fields as opportunity offers, will enable the teacher to give valuable aid to the pupils by directing observation and suggesting thought. Thus by having their interest aroused pupils will be encouraged to do work on their own account. Thus, too, by the activity of the teacher and the growing intelligence of the pupils, will Nature Study gain in public favor.

How to observe is quite as important as how to study. Out-of-door work to be profitable must be as orderly and well conducted as class work in the schoolroom.

To those whose education ends with the country school the habit of observing and recording, of reasoning, judging and estimating, will be found most useful, while to those who continue at school in the higher grades it will prove of the utmost importance, especially in the science studies.

Reports showing in detail the work done month by month are required to be made by the teacher to the inspector during the last school week in December every year. This report is also required to contain specific answers to the following questions:

1. What effect has your Nature Study teaching under this Course had on your school?

2. Have you been able to do better or less effective work in other school subjects by correlating Nature Study with them?
3. Has the work interested your pupils?
4. What is the sentiment of ratepayers toward Nature Study work?
5. What, in your opinion, are the reasons for this sentiment?

It is believed that Nature Study is not an added burden to the teacher's task. It deals with life and action near at hand, and consequently invigorates and relieves from monotony many schoolroom problems. Much can be done out of school hours by pupils, at home and on the road to and from school. The wisdom of the teacher will be felt, in guiding and stimulating endeavor by the pupils and in personally leading the way, in collecting information, inciting questions by pupils, in reporting, making drawings, asking questions, and in always encouraging and commending effort on the part of the pupils.

A cabinet will always be found a useful piece of furniture in the schoolroom. Where Nature Study is effectively taught a cabinet is a necessity. Much interest is dissipated when collections are not properly cared for. A cabinet should be large enough to hold the smaller apparatus of the school when not in use and also to afford room for reports, bulletins, records, reference and library books. It should be kept locked except during school hours, or when the teacher is present.

Supplementary reading of a helpful character may be found in the animal stories of Chas. G. D. Roberts and Ernest S. Thompson, selections from standard works of fiction descriptive of village and country life and scenery in Canada and other countries, the best pastoral poetry of our own and other times, and articles from current Canadian magazines dealing with particular localities in New Brunswick and other parts of Canada.

A Bird Calendar should be carefully kept in every school, teacher and pupils acting together. Birds are to be observed, described and named. Their coming and departure should be accurately noted, their habits studied, and lessons given as to their food and economic value. The study of birds affords an excellent training for the ear as well as the eye. The cultivation of the sense of hearing has received too little recognition in schools. Not only do the notes and songs of birds give us material to be used to advantage in this regard, but many other features of Nature Study are valuable for the same purpose.

A Flower Calendar will also be found of great advantage. It is a record of the first known appearance in spring of bloom of wild plants. The date of finding, where found, name of plant, by whom found, are the principal items to record.

Observations of flowers and birds furnish data for the study of local geography and the variations of climatic conditions.

Both Bird and Flower Calendars should be kept on file for reference and comparison from year to year. The record of many years of faithful observation will prove of great interest and of historic value in the District.

In large ungraded schools having pupils in all grades with only one teacher it may be found advisable to combine two grades for Nature work. In such cases selections from the work laid down for the grades combined, as the teacher finds best adapted to the intelligence of the pupils, should be made, the remainder of the work being left for the next year.

This Course is arranged for Ungraded Country Schools. The following, arrangement will be found applicable to Graded Schools:

Grade I (Ungraded) = Grade I (Graded)
" II " = " II "
" III " = Grades III and IV "
" IV " = " V " VI "
" V " = " VII " VIII "

R. P. S.

This pamphlet becomes the property of the School District. The teacher should take care to attach it to the inside of the Register cover at the front, for preservation and ready use.

In no case should it be taken by the teacher leaving a District.

NATURE STUDY AND AGRICULTURE WORK FOR GRADES III, IV AND V (UNGRADED SCHOOLS), AND GRADES III, IV, V, VI, VII, VIII AND GRADED COUNTRY SCHOOLS.

Weather Report.

Weather report systematically and carefully kept throughout the School year. Pupils taught to observe daily conditions and to record the same accurately.

An ordinary exercise book will be found sufficient for the purpose. A double page ruled after the accompanying plan will serve for a month's use.

Record book may be kept for a week by two pupils, leader and alternate, under direction of teacher. Following week alternate to become leader with new pupil as alternate, and so on.

Record book to be hung near teacher's desk and to be available at proper times. Each year's record to be preserved in library.

PLAN OF WEATHER REPORT.

Date	Direction of Wind		Calm	Temperature		Rain or Snow		Appearance of Sky		Special Notes
	A. M.	P. M.		A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	
Sept.										
1	N. W.	W.*	....	55 deg.	60 deg.	....	....	C'r.	some C'ds	....
5	S. W.	S.	....	v. W.	W.	R.	....	h.Clouds	cloudy	....
17	S.	S. E.	....	C'l.	W.	R	R.	Cloudy	cloudy	Line gale, very severe
22	....	....	C'm	50 deg.	63 deg.	....	....	C'r.	C'r.	....

Teachers are recommended to obtain a thermometer for the use of the school.

A weather vane and a rain gauge of the simplest construction would also be found very useful in securing accuracy.

If school has no thermometer, indicate temperature thus, v. W., very warm; W., warm; C., cold; v. C., very cold; e. C.. extremely cold, and so on. R. for rain; Sn. for snow; Sl. for sleet; C'd, cloud; h. C'd. heavy cloud; l. C'd., light cloud; C'm. for calm. *may indicate strong in wind column. C'r. clear. Under the heading "Special Notes," may be recorded, line gale, severe thunder storm. very heavy fall of snow, breaking up of rivers in spring, first ploughing, first hay cutting, and other occurrences indicating climatic conditions and events of local importance.

GRADE I.

SUGGESTIONS TO PRIMARY TEACHERS

The beginning of school life is a critical period in the history of the child. Much of his interest, attention and success in school depends upon the incline his nature is given toward the work he is required to do during the first year. His relation toward the persons and things through which he has obtained the knowledge and experience he possesses at six years of age has been one of pleasurable activity and almost unbounded freedom. His senses have been the channel of development. His ability to use language has grown through his desire to tell others of what he has seen, heard, touched, tasted and smelt, and to express his thoughts about his surroundings. Because the objects near him interest his mind he asks questions that he may know more about them and what others think of them.

If now the primary teacher is to hold the attention and develop the interest of the pupil just arrived at school she must recognize what knowledge the child possesses and the channels through which it has been acquired. Lessons of an abstract nature on words, number exercises with supposed questions, and forms without meaning to the child should be deferred. The child's plane of activity will suggest the concrete material that claims his attention, and through this medium his education will best continue and develop under the skilful management of the trained, thoughtful teacher. Assisted and directed observation orderly arrangement, varied occupation and general instruction will all play their part in the process. To stimulate, promote and regulate the pupil's desire to know is the worthy aim of the teacher.

Thus nature work may be made the connecting link between home and school activities, between the loose, free life of the child prior to school age and his regular connected duties at school. The knowledge acquired through the free exercise of the child powers provides an incentive to work which strengthens through similar exercise now directed and regulated. A substantial foundation is laid for a gradual transition from concrete to abstract subjects, with all the time a growing interest in the work.

The Nature work of the first year should be very largely of a general character, with the object of training children to observe intelligently, of fostering in them an appreciation of the physical features of the home section, of having them truly *know* some things, and of giving a bent to their mental activities, relating them pleasurably to the conditions of their surroundings. Their principal instruction during the first few months might well be chiefly through nature. To this end the wild flowers, the birds, the domestic animals, the brook or stream or lake, the fields of growing grain, the fences, pasture land and forest, the rocks, the shore, any attractive spot, these or any of these, or others that the particular locality affords, will furnish material that will enable the teacher to do her best for the child. Let the teacher show an interest in the natural features of the District the little ones take pleasure in, let her cultivate this interest by observation and study.

Lead the children to talk freely about what pleases them. From what they know, lead them to observe and acquaint themselves with new facts. To win the confidence of the child, to have him become free, natural and easy in manners and conversation, while at the same time training and instructing him, is the teacher's great purpose. The school home is one room of the nature home, full of new interesting things to do, new facts, new thoughts. Know the child by knowing his pleasures, tastes, desires, and lead him to know and trust you. So far as circumstances may permit, keep both the mind and body of the child busy Secure training, interest, attention and development through action.

SEPTEMBER.

Bring wild flowers to school. Have pupils bring some. Conduct conversations about the places where they find them. Have pupils count kinds brought. Notice various colors of bloom. Tell stories about flowers, their life, perfume, beauty. Collect bright colored leaves. Have lessons on them.

Talks about domestic and pet animals and birds. Direct observation of pupils.

Have talks about **water, rain, clouds, winged insects, fruits, fish.**

OCTOBER.

Plan and give easy lessons on fruits, especially the apple and plum, as to shape, color, taste; also on the falling of leaves. Encourage pupils to observe and tell what they have seen.

Notice locomotion of **horse, rabbit, snake, bird, fish, toad,** and other animals. Distinguish printed words descriptive of one or more movements of each.

Read or tell stories about the woods and what may be seen and heard there. Where possible take children to near woods.

Teach pupils to properly pronounce names of common articles in home, school, field, shop, woods.

NOVEMBER.

Observe **frost** as seen on grass, trees, stones and exposed boards in the morning sunshine. Follow these observations with short lessons on **ice.**

Have conversations about the fire in stove, smoke from chimney, the near stream or hill, the cold wind, the shore, the sky.

Notice sounds made by **fire, running water, wind.**

Count the trees and shrubs in school yard. How many have dropped their leaves?

How do animals prepare for winter? Lessons on the **squirrel.**

Name some of the parts of a **carriage, harness, house, coat, ship** or **boat.**

DECEMBER.

Notice when snow sparkles most. How many colors can you distinguish? Look at frost pictures on the window pane. Give short lessons on the foregoing.

What trees are still green? Notice the shadow of one at noon several days during the month. Does it lengthen?

Find some things that are either **smooth, white, soft, rough, cold, hard, heavy, bitter, round, sharp, pretty.**

Santa Claus stories about our own and other countries.

Short lessons on the **cat,** its food, how obtained, its fur.

JANUARY.

Notice the **sun,** the **moon.** Give short lessons on their rising and setting. Lessons on location, as **left, right, up, down, across, under, near, in.**

Where can you coast? Give lessons on surface, the appearance of snow after rain, crust.

What animals on farm eat hay? Which eat grain, but not hay? Observe them eat, and tell what you have seen. What calls of animals are heard in winter? Lessons on the sleep of plants in winter, their covering.

Tell stories of children in other lands in winter. Illustrate by pictures.

FEBRUARY.

Easy lessons given on **clothing,** of what made? from what sources? comfort, warmth. Observe icicles forming, when? where? Draw pictures of trees in winter. Notice footprints on snow, the tracks of animals. **size, shape, depth in snow.**

Lessons given on articles seen in a kitchen, on care of caps, boots, mittens' coats, their proper place when not in use.

Aim to secure correct pronunciation of words used. Distinguish printed name words. Encourage questions by pupils.

MARCH.

Begin to direct attention to the signs of spring life, melting snow, lengthening days, returning birds, swelling buds. Incite pupils to gather information and report. Make lessons as interesting and practical as possible.

Have pupils cut from paper forms of animals, learning the while the names of some parts, as **mane, wing, horns, bill, fleece.**

Give lessons on **hill, hollow, level, pond, stream.** Use out-door conditions to illustrate teaching. What portion of school ground becomes bare first? Why is this?

APRIL.

Notice where the grass begins to grow first and best. Lead pupils to the reasons. Carefully observe and distinguish notes and calls of spring birds and other animals. Use the proper word to describe each. Know birds by their voices, without seeing them.

Sprout seeds. Observe development of buds. Talks about spring games.

Examine playthings as to **shape, size,** and other properties.

Teach pupils to find the south and north points of sky.

Observe germination of small seeds. To do this place two sheets of wet blotting paper together. Scatter seeds over the wet surface. Place a sheet of glass size of paper above, turn the pad over, then scatter other seeds on second wet surface; place a second glass over same. Then tie both pieces of glass with wet pad between them firmly together. Keep moist and warm and in the light. The seeds as they sprout can be observed through the glass on both sides.

MAY.

Plant larger seeds such as bean, pea, in damp earth. Keep warm. Watch development. Teach pupils to know some common farm and garden seeds by sight. Make drawings of some simple leaves.

Encourage pupils to bring blossoms, such as violet, dandelion and earlier kinds. Keep a list of flowers brought.

How do animals show fear? Notice, and learn words to properly describe the different ways.

What are the birds doing? Watch them. Let teacher give lessons founded on pupils' observations.

JUNE.

Talks about the odours of flowers. Distinguish some flowers in this way. Read or tell stories of warmer countries where blooming plants are more luxuriant than ours.

Observe **bees** and **birds** at work.

Of what uses are the **plough, hoe, spade, hammer, halter, wrench**?

Give talks about the value and beauty of trees, kindness to animals.

Give lessons on common insects, such as house fly, mosquito and others. Direct observations.

GRADE II.

SEPTEMBER.

Observe summer birds, their habits, colors of plumage, their young ones Distinguish six kinds of birds. Describe them. Learn names. Find locations of some nests.

Learn names of four winged insects you see. Notice where seen. Observe sounds made by them. What harm do they do?

Collect some of the most common weeds in the District. Give short lessons on them, giving names.

Give short lessons on the grains of the District; also **berries** as to color, form, use. Collect grass and clover heads.

OCTOBER.

Points of compass taught. Practice as to places near at hand. Outdoor exercises. Note places in District where sun's rays fall first every morning.

Lessons on leaves given. Why do they fall? Notice effects of frost on plants. Color lessons. Drawings made of some simple leaves

Lessons on animals given. Which have horns, bills, web-feet, claws, combs, hoofs, fins, scales?

What trees have nuts? Collect some nuts and make drawings of two kinds.

NOVEMBER.

Lessons given on cold winds. Notice direction of winds, the prevailing winds with rain, also those when fine and cold.

Require pupils to observe sky in early evening, the moon, its change of shape, position in sky at given time.

Give lessons on the appearance of the country now, hills, lowlands, streams, ploughed land, green sward.

Make lists of fruits and vegetables stored for winter use. Descriptions given orally after lessons.

The care of animals, their protection, warmth, food. Lessons given from observations made.

DECEMBER.

Stories read or told of animals of warm countries. Comparisons made with ours. Lessons on the cat.

Notice the sun's position in sky at noon, how it varies throughout the year. Easy lessons given on the bark and buds of trees in winter

Observe rabbits. Lessons given on their habits. Talks about the pleasures of country boys and girls in winter. The Christmas tree gifts. Winter playthings.

JANUARY.

Lessons given on stars, the largest and brightest ones seen in early evening. Talks on the winter work of the men of the District. Make list of farm implements. How should they be cared for in winter?

Distinguish the evergreen trees. Compare appearance of different kinds in the fields. Bring twigs to school. Make drawings.

Make a list of the winter birds you see. Gather from pupils facts about each kind, as to food, shelter. Lessons on the feet of birds.

Make a drawing of the school house and grounds. Notice the view from school house door. (In all grades attention should be called to views in District with the object of developing appreciation.)

FEBRUARY.

Observe drifts, their position, cause, depth. Lessons given based on observations made. Winter roads, when best?

What do wild animals eat in winter? Use words to describe the different ways in which animals protect themselves. What are mutton, pork, beef, veal, tallow, lard? Teach pupils to read pictures, especially of country scenes with a view to cultivating taste.

Observe the sounds of winter. Make a list of articles seen on a dinner table.

MARCH.

Tell stories about countries with high mountains, avalanches, glaciers. Notice snow slipping from roof on warm days Compare position of sun at noon now with same last December.

Give lessons on seed to be planted next month. Collect from pupils their observations of returning spring, buds, birds, melting snow, rain.

Notice the differences between hard and soft woods, their bark, weight, color. Give lessons on two kinds.

APRIL.

Make list of the names of young animals. Ask pupils to carefully observe these young animals and learn some things about them; also wild geese, ducks, frogs. Note when first seen, last month or this. Question pupils and lead them to get definite knowledge.

Lessons with observations on transformation of insects; also on first flowers brought by pupils to school. Lessons on colors given. (Cocoons to be used in studying insects.)

Out door lessons given on home geography taking advantage of surface of country to illustrate definitions of island, cape, bay, cove. Planting seeds for observation purposes.

MAY.

Prepare and plant school garden plots. Observe proper depth of covering of seeds in garden. Avoid waste of seed. Lead pupils to recognize birds by their songs or notes, also where birds build their nests.

Notice tree blossoms, cones, before and after they have fallen.

Talks on clouds, their motions, colors. Name our work animals. Make drawings of two. Lessons from observations on fowls.

What are the men of the District doing? What fish are seen in the stream, lake, river or coast water, near or in District?

JUNE.

Lessons given on the weeds that first appear in garden Observe those that grow from root of last year and those that come from seeds.

Make a list of the insects (caterpillars and grubs) that injure your garden plants, also how they injure. Notice the part of plant they attack.

Lessons on shadows, light, darkness. Learn to distinguish plants by the odor of their blossoms and recognize bark leaves, and other things by touch.

Name some things that are smooth, bitter, round, sharp.

GRADE III.

Physical map of District on large scale. Construct it gradually throughout the summer term. Indicate hilly and forest land by different shadings after observations and estimates are made by pupils under direction of teacher. Streams, brooks, creeks and rivers marked. Locate roads and bridges, churches, halls and post office. Each pupil marks on his map location of his home.

A sand table will be found most helpful in connection with the study of home geography. Every school should have one. It is easily made. A good size is four and one-half feet by three feet and four inches deep. It should be made perfectly tight, and, if possible, lined with tin or zinc. For greater convenience the supports of the table should be hinged or removeable, so that when table is not in use it need not occupy so much room.

Such a table with sand, would enable a teacher with the help of pupils to construct the District in miniature, showing the hills, valleys, streams, roads, bridges, etc. The wooded portions of District might be indicated by standing twigs upright in the sand. After sand table has been used intelligently, the map of the District can be more easily placed upon blackboard, slate or paper

SEPTEMBER.

Lessons on common garden weeds. Observe parts, as root, stem, leaves, flower, seed. Make a list of the different crops grown in the District.

Lessons on equality of length of days and nights Note position in sky of sun at rising, mid-day and setting. Observation of harvest moon. The sky at dawn. Winds.

Young birds and fowl observed and studied. The eggs of insects, where deposited.

Collections made of six kinds of seeds. Lessons on berries, scattering of seeds.

OCTOBER.

Use features of the District to explain and illustrate geographical terms studied.

Study four common shrubs. Drawings of leaves made also of the shrubs studied.

The root harvest, careful study and observation of potato and turnip

Lessons on the sheep, its food, habits, value. Readings and easy lessons about wool bearing animals in other countries

Short excursions in near woods under direction of teacher. Collections made and lessons on same in school.

NOVEMBER.

Practice in estimating weights of various things. Observe weight as compared with bulk. Test estimates to train in accuracy. Compare samples of grain by weight.

Notice appearance of sky, relation of winds to temperature, freezing and thawing of water and earth.

Lessons given on animals, their preparation for winter. the bear, squirrel, wild goose, rabbit. Lessons on the dog.

Compare fir and spruce boughs. Notice cones, rings of wood in trunk.

Make a list of articles used in a house with names of not more than two syllables.

DECEMBER.

Make a drawing of the principal river, creek or brook in the District. Make a list of the trees seen along its banks; another of the anjmals seen near or in its waters.

Study of winter birds. Notice their habits, shelter, food. (More accurate work than in former grades.)

The sun's position in sky at noon now as compared with same in September.

Collect samples of bark from many trees. Learn to distinguish.

Where are the farm tools and machinery kept? Why? Lessons on the effect of weather on wood and iron.

JANUARY.

Map of Parish drawn, showing principal physical features and location of chief industries. (This may occupy until end of March.)

Make a list of the fur bearing animals of the District, also a drawing of one you have seen.

Snowflakes observed. Lessons given on snow, direction of wind in fine weather, the sky in evening, sunset.

Study a pine tree or any evergreen in District. Make a careful drawing of the one studied, also of a branch.

FEBRUARY.

Easy lessons on fur. Make a list of fur-bearing animals of other countries.

Find the evening star this month. Learn name. In what part of sky is it found?

Lessons given on tools used for working in wood. Describe the saw Make drawings of all you study.

Construct lists of words indicating: 1st, habits of animals; 2nd, their qualities; 3rd, uses; 4th, colors.

Write paragraphs on winter out-door amusements.

Lessons given on rocks and minerals collected by pupils in District during autumn.

MARCH.

Observe that days and nights are again of equal length. Note position of sun at noon, morning and evening; the prevailing wind.

Study of twigs and buds. Notice changes from day to day. Make drawings of branches showing position of buds.

Lessons on the melting snow, running water. What places in District lose snow first? Why?

Make list of articles seen in a dining room. Of what use is each one? Of what made?

Lessons on the cow, as to food, uses, care, habits.

APRIL.

Map of County begun and continued until end of June.

Plant seeds, bean, corn, pea, in boxes of earth. Plant sufficient of each so as to pull some up from time to time to observe growth. Carefully observe and name parts. Write description.

Lessons on spring flowers and buds, wild shrubs, roots.

Notice animal life in swamps and pools. Observations on spring work in country.

Reasons for Arbor Day work.

MAY.

Birds. Observations and lessons on nest building. Where do they build? Of what?

Practical work in planting. Setting out biennials to produce seeds. Encourage pupils where possible to have small garden plots at home.

Weekly compositions on progress of work outside. Composition on Arbor Day work and results.

Observe closely root hairs. What is their use? Use of roots in general.

Make lists of trees with, 1st, hard wood, 2nd, soft. Observe features of each. Notice the grain of wood, sap.

JUNE.

Review of spelling of words used in year's nature study course.

Five garden weeds studied.

Lessons on color as illustrated in nature. Harmony of colors.

The summer sky, clouds, twilight. Length of day. Position of sun at rising, setting and noon. Five insects, (grubs and caterpillars) injurious to plants. Observe their work. Notice which ones eat leaves or stalks of plants.

Birds.—The summer warbler, cedar-wax-wing, thistle bird and humming bird. Describe them. **Make drawings.**

GRADE IV.

SEPTEMBER.

Lessons on common field weeds. Collections of weed seeds made, care being taken to have them ripe and thoroughly cleaned before bottling. Mount plants.

A potato plant studied. Drawing made showing plant as it appears above and below surface of soil.

Lessons with observations on fruit blights. Drawings made of apple cut longitudinally and across, showing seeds in cells. Lessons on injuries made by larvae of insects to the apple, pea.

Weekly compositions on harvesting.

OCTOBER.

Estimate distances. Test by rule, rod, 100 yards, chain. Practice measuring distance and surface, an acre with square corners, a board, a plank.

Game animals, moose, duck, deer, bear. Their food, habits. The hunter's moon. Lessons given on the above. Drawings of animals made.

Name plants of which either the root, stem, leaf, fruit or seed is used for food.

Root crops studied. Estimate quantities grown in district. Value of season's yield of butter and cheese at current prices. Make out statement.

NOVEMBER.

The geographical homes during winter of the birds that have left us. Lessons given on their winter life.

Study fall and winter conditions of buds to campare with spring life. The tamarack tree. Make drawing. Observe foliage, buds, bark, wood.

Lessons on cattle, their structure, economic value. Make drawing of an ox, showing position of the different cuts of beef, and learn their names.

Collect samples of soil for winter and spring use, rocks. Examine ravines, creek banks, sides of steep hills.

Note need of care of machinery used in summer,—rust checking of wood, how to prevent.

DECEMBER.

Lessons on winter solstice, conditions in northern countries, the evening sky, the Milky Way.

Lessons given on the horse, pig and fox. Make drawings of each. Note habits. Make lists of words, naming parts of each.

Make a list of farm implements and machinery. Give use of each. Lessons on milk, the cream separator.

Arithmetical questions in which contrasts are made between summer and winter prices of farm products. (Also for Grade V). Composition on what one sees in the woods in winter.

JANUARY.

What are the exports of the District? Where are the markets? Farm arithmetic. Lessons on the food and care of stock. Compositions on lumber operations.

Fur bearing animals of the Province, value of pelts. Habits of some of these animals studied

Lessons on the fruits we import. What countries do they come from?

Make drawings of a hatchet and auger. Name some things you have made by using these or other tools. Name other tools.

FEBRUARY.

Account for open springs in winter. Lessons on rock formation.

Collection of woods made. Lessons on uses of each. Classify maples.

Analysis of soils collected in fall. Easy experiments on soils by water tests. What is loam? Clay? Distinguish.

Farm arithmetic

Compositions on winter amusements. Learn the names of some stars and their position in sky; also moon's phases.

MARCH.

Animals of other countries useful to man for food, for labor, in travelling. Lessons given using pictures for illustration.

Compare climate of New Brunswick with that of Manitoba and British Columbia Trace out reasons for differences. Use weather report to sum up climate of neighborhood Farm arithmetic continued.

Make lists of crop plants native to this country, of those that have been brought in. Lessons on the history of plants.

What are slate, marl, clay. sandstone, peat, humus? Give lessons on each.

APRIL.

Notice effects of winter frosts on land. Test farm and garden seeds Select best seeds.

Lessons given on shell fish of the Province, their value, method of catching.

Identify, describe and name birds and wild plants of spring.

Lessons given on sound, echoes, reflections.

Study of the alder, cedar and maple.

Arbor Day preparations made. Cleaning up grounds. How a tree should be planted.

MAY.

Study of destructive insects, their method of work, how to deal with them. Careful study of the four stages of insect life.

School garden work. Lessons on earth worms.

Lessons on flowering shrubs, also on the pruning of trees and shrubs, mosses. River and shore fish, lessons on their value, methods of catching and preserving.

Make drawings of shad, salmon, trout or other fish known in District.

Encourage pupils to have small flower gardens at home.

JUNE.

Study of small fruit blossoms. Observe bees, spiders, ants. Write out an account of your work. Make a list of the names of birds you can recognize by their songs or notes. Write an essay on "Our Song Birds," as seen by the writer.

School garden work continued.

Learn to recognize various kinds of trees at a distance, by color of foliage and general shape. Notice shades of green. Have pupils select by vote the prettiest view in District.

Lessons on dew, conditions of deposit.

GRADE V.

SEPTEMBER.

Lessons with observations on the effects of weeds, methods of eradication. Make a list of the weeds you know and whose seeds you can identify. Mount plants.

What are **rust, smut, weevil?**

Make a study of ferns throughout the month. How many kinds can you identify?

Lessons on our birds of prey. Note differences between shrubs, trees, herbs. Observation and study of seed dispersion.

Semi-monthly compositions on harvesting. (Mark papers carefully and keep record of marks made by each pupil).

OCTOBER.

Observe the fertile and barren land of District. Seek for causes. What do you observe about drainage? What has been the yield per acre of the different crops grown in the District?

Make a thorough study of the apple. Learn to recognize six kinds.

Practice in selecting best kernels of grain, choice apples and vegetables.

Make a study of seed vessels of six plants. Observe arrangement of seeds. Lessons on eclipse of sun, and of moon.

NOVEMBER.

Have readings from time to time through the winter months from Tennyson, Whittier and others and note their knowledge of nature.

Lessons given on milk, butter, cheese, their elements, value, analysis, testing.

Lessons on the care of apparatus, books, machinery. Note the yearly loss from neglect of machinery on farms.

Observe the value of hens, turkeys, ducks, geese. Lessons on their food. Give names of some varieties of each. Make drawings of one kind of each.

What are planets? What ones do you see this month?

DECEMBER.

Learn the signs of the zodiac. Study during the winter several constellations. Locate them in the sky. Learn names and positions of some noted stars.

An essay on the cow, as to care, food value, kinds. Have a statement made of initial cost and yearly keep, with counter statement of returns during year, to show profit or loss.

Lessons on springs, wells, value of pure water, sanitary conditions, fresh air.

JANUARY.

Study of Denmark and Holland as to productions, habits and occupations of people, their thrift, cultivation of soil, trades and industries. Secure so far as possible detailed information. Make comparison with New Brunswick.

Farm book-keeping, accounts, receipts, notes, business letters.

Forest products, value, conservation of forests, lumber trade, with what countries. Estimate of amount of forest land in District. How are logs measured?

Examine implements made of wood, of iron and wood, of iron. Make a list of each kind and give use.

FEBRUARY.

Lessons on minerals which are constituents of soil.

The winter life of wild animals. From lessons, observation and reading gather information. Notice tracks in snow.

Lessons on snow and rain fall, effects of ice on land surface, on plant roots.

Farm book-keeping continued.

Field and stock accounts, balance sheet, profit and loss account.

Study of soil, what it contains, when is it fertile? Preservatives of wood in implements or exposed parts of buildings.

MARCH.

Transactions of buying and selling, combining percentage, discount, measurements, commission. Neat arrangement of work required. Systematic book-keeping.

Study of plants, their composition, what they take out of the soil, of the effects of climate on soil productions.

Commercial geography. Shipping news followed. Exports and imports.

Lessons on sap, sap-wood, inner bark, evergreen cones, root growth.

APRIL.

Study of soil formation, methods of cultivation of soil, crop rotation.

Observe birds of passage, their flight. Make drawings as seen in flight. Lessons on care of poultry.

Plans made for successful Arbor Day work and school garden. Test seeds to plant. Lessons given on how to prune trees.

Compositions on spring work on farm, stream driving.

Lessons on early flowers, the opening of brooks and ponds, life noticed there.

MAY.

Notice deposits from spring freshets. Lessons on climate, winds, showers, rainbows, fog, thunder and lightning.

Practice in distinguishing spices, fruits, and blossoms, by odors, and leaves, seeds and barks by touch.

Study of ornamental trees and shrubs. Make drawings. Study and plan improvements of school grounds.

School garden work.

Lessons on structure of honeycomb, insect webs, hornets' nests.

Young animals studied, Observation of bats, moles.

JUNE

Lessons on the spraying of fruit trees, and mixtures used for the purpose.

Test your knowledge of birds by making a list of those you can recognize at sight and by song. Write an essay on the birds of the District.

Lessons on the economic value of ornamentation of school and home grounds. Effects on character of people. Lessons on ventilation, sanitation, cleanliness.

List of Books Recommended to be Helpful in Teaching Nature and Agriculture.

1. "Agriculture, through the Laboratory and School Garden," by C. R. Jackson and Mrs. L. S. Dougherty. Price	$1.50
2. "Rural School Agriculture," by Charles M. Davis, M. A. S. Price	1.00
3. "How Crops Grow," by Prof. Samuel W. Johnson. Price	1.50
4. "Book-keeping for Farmers," by T. Clark Atkeson. Price	.25
Published by Orange Judd Co., New York. May be obtained through Wm. Briggs, Toronto.	
5. "Public School Nature Study," by Crawford et al. Copp, Clark Co., Toronto. Price	.50
6. "First Studies in Plant Life," by Atkinson. Ginn & Co., Boston. Price	.75
7. "Practical Garden Book," by Bailey & Hunn. McMillan & Co. Price	.75
8. "Wild Birds in City Parks," by H. E. & A. H. Walter. Mumford, Chicago. Price	.50
9. "Hand Book of Birds of Eastern North America," by Frank M. Chapman.	
10. "Bird Neighbors," by Neltje Blanchan.	
11. "Elementary Agriculture and Nature Study," by Dr. J. Brittain. Price	.75
Published by W. J. Gage & Co., Toronto, Ont.	
12. "How to Teach the Nature Study Course," by Prof. John Dearness. Price	.60
Copp, Clark Co., Toronto.	
13. "Bird Guide—Land Birds East of the Rockies," by Chester A. Reed. Price	.75
14. "Flower Guide—Wild Flowers East of the Rockies,"	.50
Both published by Chas. K. Reed, Worcester, Mass.	
15. "Nature Study with Common Things," by M. H. Carter	.60
Published by American Book Co.	
16. Johonnes "Flyers, Creepers and Swimmers." Price	.30
Morang & Co.	
17. "How we are Clothed. " " Fed. " Travel. Price, each	.30
McMillan & Co., New York.	

18. "Corn Plants," by F. L. Sargent. Price................ .75
Published by Houghton, Mifflin & Co., Boston.
19. "Beginner's Botany," by L. H. Bailey. Price............. .60
Published by MacMillan Co., of Canada, Toronto.
20. "Nature Study and Life," by Prof. C. F. Hodge. Price..... 1.50
Published by Ginn & Co., New York.
21. "Squirrels and Other Fur-Bearers," by John Burroughs. Price.. .60
Published by Houghton, Mifflin & Co., Boston.
22. The following, published by Charles Scribner's Sons, New York, are excellent books:
"How to Know the Wild Flowers," by Mrs. Dana. Price. 2.00
"How to Know the Ferns," by Parsons. Price............. 1.50
"Our Northern Shrubs," by Keeler. Price................ 2.00
"Our Native Trees," by Keeler. Price................... 2.00
"The School Garden Book," by Weed and Emerson. Price.. 1.25
"Agriculture for Common Schools," by Fisher and Cotton. Price.. 1.00

Annual Report of Commissioner of Agriculture for New Brunswick. Address, Fredericton, N. B.

Report of the Minister of Agriculture, Canada, Ottawa.

Experimental Farm Reports.

Farmer's Bulletins, published by the U. S. Dept. of Agriculture. Price per copy, six cents. Nos. 134, 186, 195, 218 and others.

Address: Superintendent of Documents,
Government Printing Office,
Washington, D. C.

Bulletins issued at Toronto, Fredericton and Ottawa.

Catalogues of Nature Study and Agricultural Books may be obtained of the following:

MacMillan & Co., London and New York.
Appleton & Co., New York.
Ginn & Co., Boston.
Wm. Briggs, Toronto.